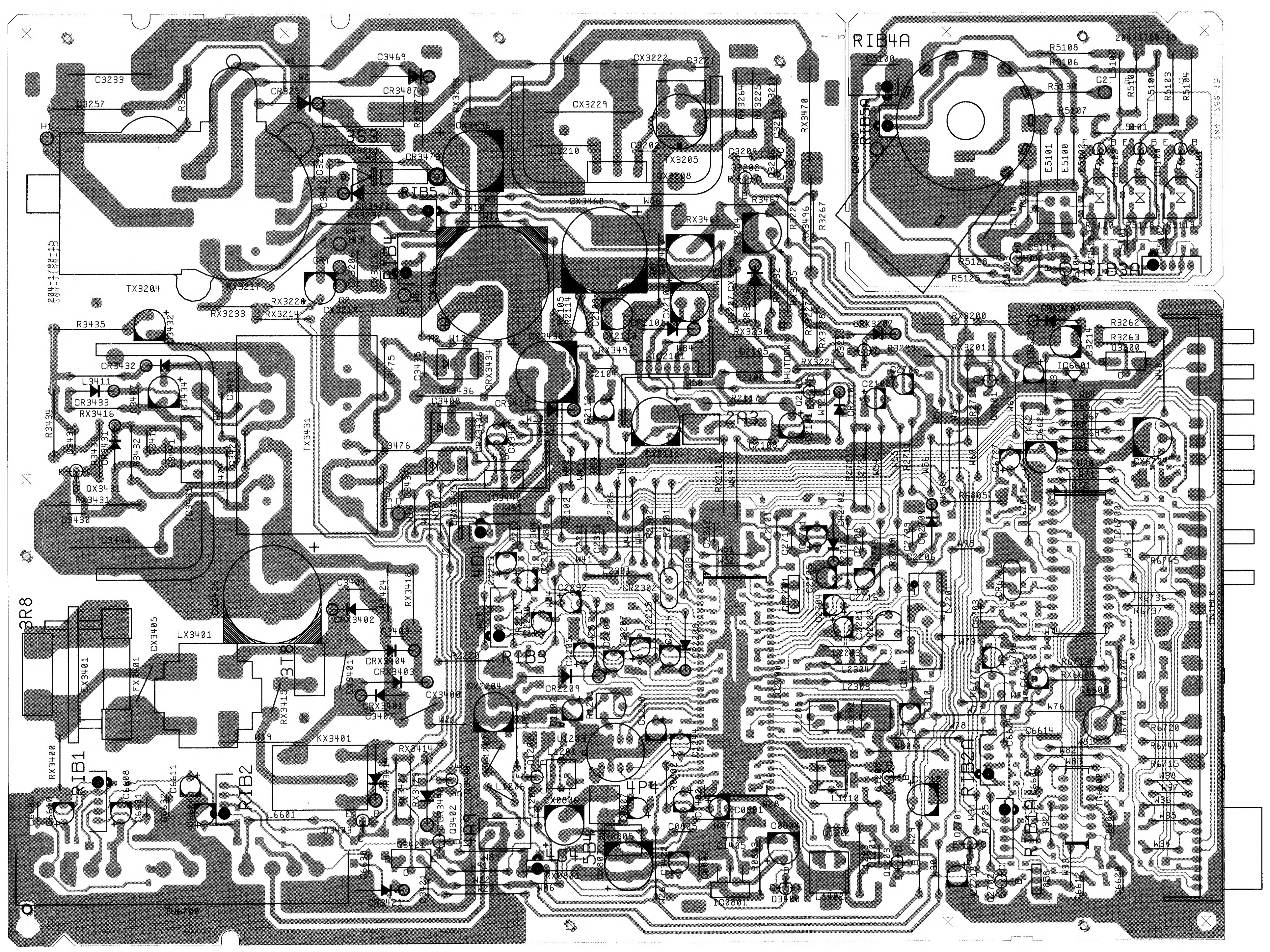
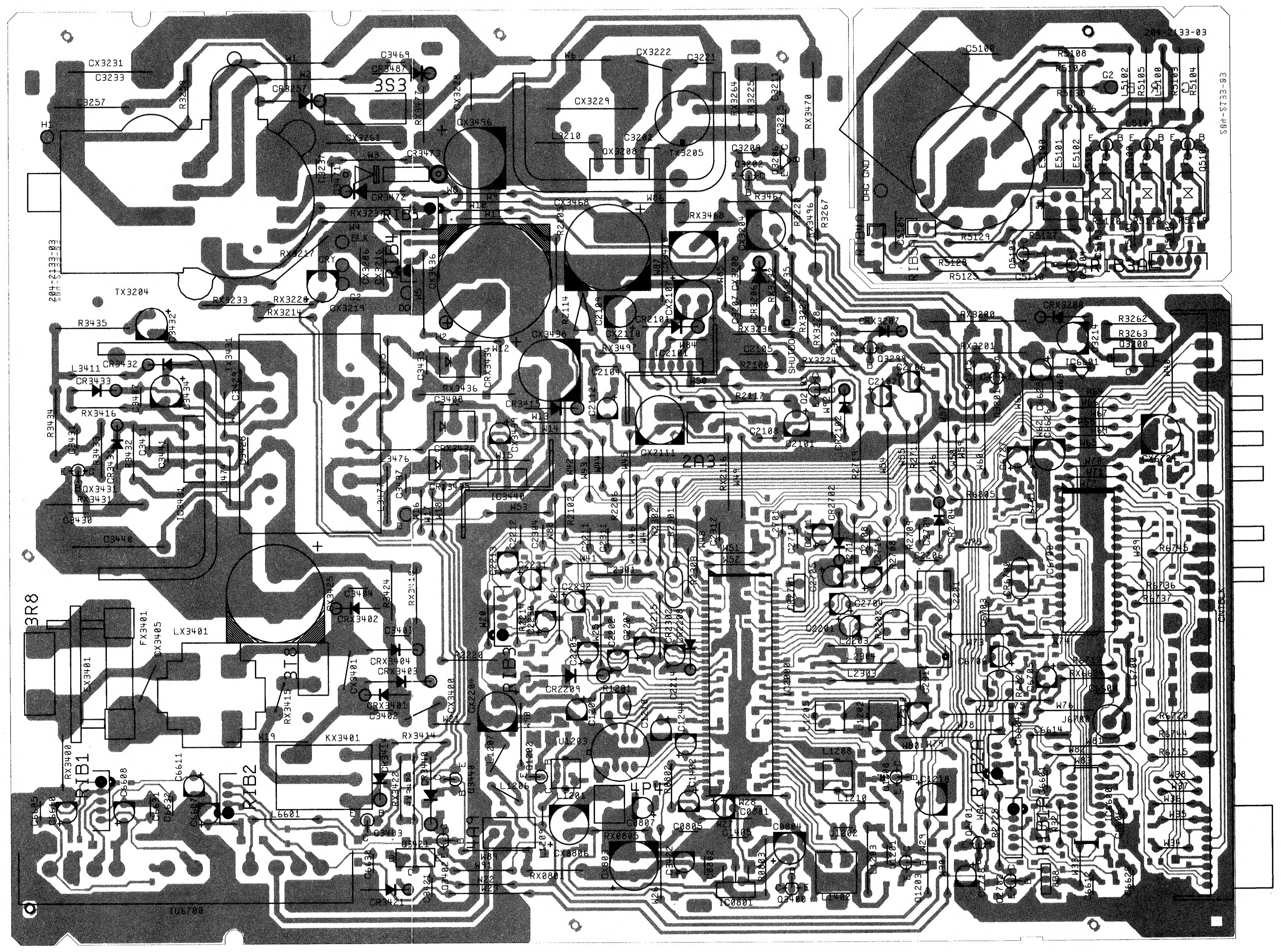
9-592-04, C-1 CHASSIS COMPONENT LAYOUT



9-795, C-1 COMPONENT LAYOUT



PURITY AND CONVERGENCE SETUP

PURITY ADJUSTMENT

To facilitate purity setup in the field a signal generator capable of producing the three individual color fields is recommended. A Leader LCG-396 NTSC Pattern Generator is suggested. The following is offered as an updated procedure for purity and convergence setup utilizing this new signal generator:

1. Allow the receiver to warm-up for 15 to 20 minutes.
2. Position the deflection yoke toward the picture tube socket.
3. Connect a Crosshatch Generator to the receiver and "rough in" the static (center) convergence as follows:
   a) Adjust the 4 pole static control by moving the two tabs *separately* to converge the red and blue lines horizontally. Move the two tabs *together* around the neck of the CRT (in a 45° arc) from the top dead center position to converge the red and blue lines vertically.
   b) After the 4 pole static control has been adjusted to superimpose the red and blue lines on top of one another, use the 6 pole static adjustment to place the converged red and blue lines over the green line. Move the two tabs *together* around the neck of the CRT (in a 30° arc) from the top dead center position to move the lines vertically. Adjusting the two tabs *separately* will move the converged beam to the left or right. Using a crosshatch generator capable of producing individual fields, adjust generator to produce a red field. Use the purity tabs to center a red stripe.

NOTE: Purity tab positioning in some of the yokes, for example, 90° and 100° Hi-Bi CRT's, 2 pole purity tabs can be either at 6 o'clock or 12 o'clock. In the case of the 90° and 110° Coty yokes, the 2 purity tabs can be at either 3 or 9 o'clock.

Now, after that adjustment is made, move the yoke to maximum funnel position.

Now switch the Crosshatch Generator to a red field.

4. Pull the yoke toward the rear of the tube neck until a red raster is displayed.
5. If the red raster is not displayed as a pure red field, adjust the purity tabs until a pure field is obtained.

MASTER G-2 CONTROL ADJUSTMENT

Before proceeding with the Purity Adjustment, the Master G-2 control must be adjusted. Using a crosshatch generator capable of producing individual fields, adjust generator to produce a green field.

a. Turn the Color Level, Brightness and Picture control to a minimum.
b. Place the set-up jumper (when used) in the Set-Up position.
c. Turn the G-2 control until raster is extinguished.
d. Return the set-up jumper to the Normal position.

BLACK & WHITE TRACKING

Before nominalizing center and yoke convergence, we must adjust the black & white tracking in order to obtain optimum center & edge convergence.

Note: Before adjusting tracking controls the G2 control adjustment must be correct. (Refer to "MASTER G-2 CONTROL ADJUSTMENT".)

Procedure:

1. Setup jumper 5L (when used) should be in normal position.
2. Reduce color level to minimum.
3. Set black level control to detent position.
4. Set picture control to minimum or low brightness raster.
5. Set red, green, blue, tracking controls to minimum.
6. The color of the raster will depend on which C.R.T. gun has the highest cutoff point.
7. Adjust the two tracking controls, (non predominent colors, determined from #6 above) alternately to obtain a dim white raster.

NOTE: Now display a crosshatch pattern on screen to check for yoke tilt. Tighten the yoke clamp. Display an air signal and adjust Focus control for best focus.

After black & white tracking has been achieved, we nominalize static and dynamic convergence. In the case of dynamic convergence, please follow this procedure.

VERTICAL-TILT WEDGE ADJUSTMENT

The vertical lines at 6 and 12 o'clock are converged by vertically tilting the yoke and inserting a wedge at the top of the yoke until it is firmly seated between the CRT glass and the horizontal coils.

PRODUCT SAFETY SERVICING GUIDELINES FOR COLOR TELEVISION RECEIVERS

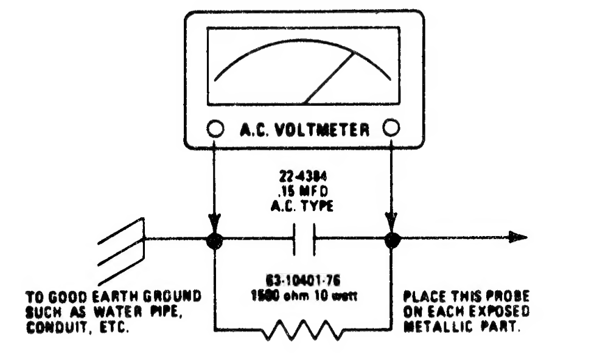
CAUTION: No modification of any circuit should be attempted. Service work should be performed only after you are thoroughly familiar with all of the following safety checks and servicing guideleines. To do otherwise increases the risk of potential hazards and injury to the user.

SAFETY CHECKS

After the original service problem has been corrected, a check should be made of the following:

SUBJECT: FIRE & SHOCK HAZARD

1. **Be sure that all components are positioned in such a way as to avoid possibility of adjacent component shorts. This is especially important on those chassis which are transported to and from the repair shop.**
2. **Never release a repair unless all protective devices such as insulators, barriers, covers, shields, strain reliefs, and other hardware have been reinstalled per original design.**
3. **Soldering must be inspected to discover possible cold solder joints, frayed leads, damaged insulation (including AC cord), solder splashes or sharp solder points. Be certain to remove all loose foreign particles.**
4. **Check the "across-the-line" capacitor and other components for physical evidence of damage or deterioration and replace if necessary. Follow original layout, lead length and dress.**
5. **No lead or component should touch a receiving tube or a resistor rated at 1 watt or more. Lead tension around protruding metal surfaces must be avoided.**
6. **All critical components such as fuses, flameproof resistors, capacitors, etc. must be replaced with Zenith factory types. Do not use replacement components other than those specified or make unrecommended circuit modifications.**
7. **After re-assembly of the set always perform an AC leakage test on all exposed metallic parts of the cabinet, (the channel selector knobs, antenna terminals, handle and screws) to be sure the set is safe to operate without danger of electrical shock. DO NOT USE A LINE ISOLATION TRANSFORMER DURING THIS TEST. Use an AC voltmeter, having 5000 ohms per volt or more sensitivity, in the following manner; Connect a 1500 ohm 10 watt resistor, (63-10401-76) paralleled by a .15 mfd. 150V AC type capacitor (22-4384) between a known good earth ground (water pipe, conduit, etc.) and the exposed metallic parts, one at a time. Measure the AC voltage across the combination of 1500 ohm resistor and .15 mfd. capacitor. Reverse the AC plug and repeat AC voltage measurements for each exposed metallic part. Voltage measured must not exceed .75 volts RMS. This corresponds to 0.5 milliamp AC. Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.**


A.C. VOLTMETER
22-4384
.15 MFD
A.C. TYPE
63-10401-76
1500 ohm 10 watt
TO GOOD EARTH GROUND SUCH AS WATER PIPE, CONDUIT, ETC.
PLACE THIS PROBE ON EACH EXPOSED METALLIC PART.

SUBJECT: IMPLOSION

1. **All Zenith picture tubes are equipped with an integral implosion protection system, but care should be taken to avoid damage during installation. Avoid scratching the tube.**
2. **Use only recommended Zenith replacement tubes.**

SUBJECT: X-RADIATION

1. **Be sure procedures and instructions to all service personnel cover the subject of X-radiation. The only potential source of X-rays in current TV receivers is the picture tube. However, this tube does not emit X-rays when the H.V. is at the factory specified level. It is only when the H.V. is excessive that X-radiation may be generated.**

   Refer to the X-ray Precaution Label which is located inside each television receiver for the correct high voltage. The proper value is also given in the applicable service manual. Operation at higher voltages may cause a failure of the picture tube or high voltage supply and, under certain circumstances, may produce radiation in excess of desirable levels.
2. **Only Zenith specified CRT anode connectors must be used. The degaussing shield also serves as an X-ray shield in color sets, do not defeat its purpose.**
3. **It is essential that the serviceman has available an accurate and reliable high voltage meter. The calibration of the meter should be checked periodically against a reference standard, such as the one available at your distributor.**
4. **When the high voltage circuitry is operating properly there is no possibility of an X-radiation problem. Every time a color chassis is serviced, the brightness should be run up and down while monitoring the high voltage with a meter to be certain that the high voltage does not exceed the specified value and that it is regulating correctly. We suggest that you and your service organization review test procedures so that voltage regulation is always checked as a standard servicing procedure, and that the high voltage reading be recorded on each customer's invoice.**
5. **When troubleshooting and making test measurements in a receiver with a problem of excessive high voltage, avoid being unnecessarily close to the picture tube and the high voltage compartment. Do not operate the chassis longer than is necessary to locate the cause of excessive voltage.**

GRAPHIC SYMBOLS:

⚡ **The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the service personnel to the presence of uninsulated "dangerous voltage" that may be of sufficient magnitude to constitute a risk of electric shock.**

⚠ **The exclamation point within an equilateral triangle is intended to alert the service personnel to the presence of important safety information in service literature.**

SUBJECT: TIPS ON PROPER INSTALLATION

1. **Never install any receiver in a closed-in recess, cubbyhole or closely fitting shelf space.**
2. **Never install a receiver over, or close to a heat duct, or in the path of heated air flow.**
3. **Avoid conditions of high humidity such as: outdoor patio installations where dew is a factor, near steam radiators where steam leakage is a factor, etc.**
4. **Avoid placement where draperies may obstruct rear venting. The customer should also avoid the use of decorative scarves or other coverings which might obstruct ventilation.**
5. **Wall and shelf mounted installations using a commercial mounting kit, must follow the factory approved mounting instructions.**
6. **A receiver mounted to a shelf or platform must retain its original feet (or the equivalent thickness in spacers) to provide adequate air flow across the bottom. Bolts or screws used for fasteners must not touch any parts or wiring. Perform leakage tests on customized installations.**
7. **Caution customers against the mounting of a receiver on a sloping shelf or in a tilted position, unless the receiver is properly secured.**
8. **A receiver in a roll-about cart should be stable in its mounting to the cart. Caution the customer on the hazards of trying to roll a cart with small casters across thresholds or deep pile carpets.**
9. **Caution customers against the use of a cart or stand which has not been listed by Underwriters Laboratories, Inc. for use with their specific model of television receiver.**

NTSC (ONLY) SS

256

ZENITH®

SERVICE SYSTEM SCHEMATIC

CM-141/C-1(A)
CM-141/C-1(B) ON REVERSE SIDE

COLOR TV RECEIVER
C-1 CHASSIS
MANUAL/REMOTE TUNING SYSTEM
(9-592/9-795 MAIN MODULE)

CM141 C1A

CM-141/C-1(A)
CM-141/C-1(B) ON REVERSE SIDE

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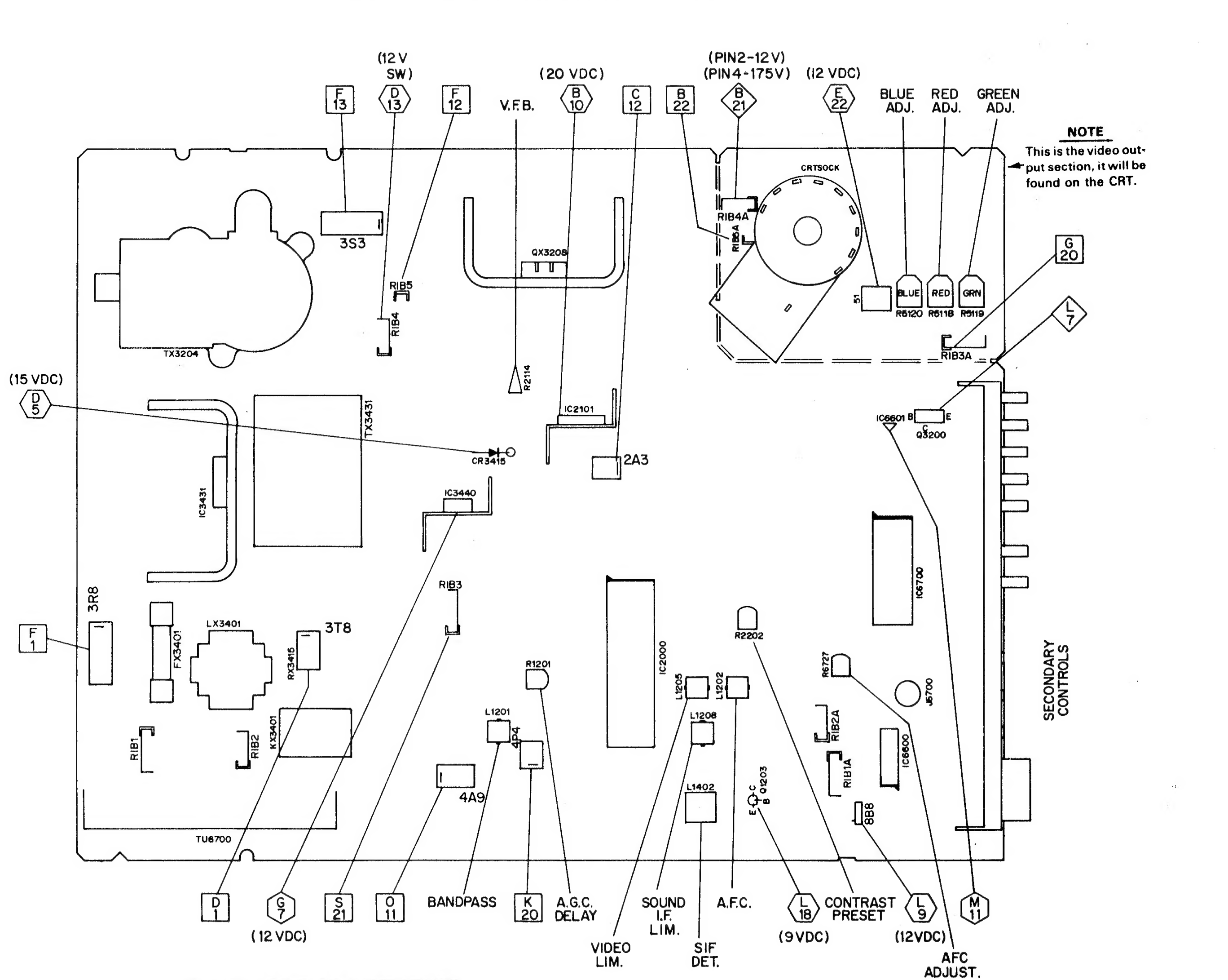
CHASSIS BOARD VOLTAGE LOCATION LAYOUT



C-1 CHASSIS ADJUSTMENTS

When necessary, field adjustments can be made as follows:

1. Bandpass M 16 (L1201) – Tune in weak station (less than 600μV). Monitor IF AGC and tune coil for max. Back off adjustment ½ turn.
2. AGC Delay P 16 (R1201) – . Adjust for no back ground snow or signal strenth of approximately 1mV.
3. Video Limiter Q 17 (L1205) – Monitor IF AGC and adjust coil for minimum. The best Limiter adjustment results in good video transient response (minimum pre- and overshoot).
4. Sound IF Limiter O 18 (L1208) – Adjust for minimum buzz in audio on quiet passages.
5. AFC N 16 (L1202) – Tune set to an off-air channel to assure accurate frequeny reference (no offsets). Adjust AFC coil for 3.0V at pin 13 of IC6700.
6. Audio Detectro Coil P 18 (L1402) – Adjust for best overall audio (least buzz/distortion) on both strong and weak signals.

CHASSIS CONNECTORS REFERENCE NUMBERS AND DESCRIPTION

2A3 – YOKE VERT
3R8 – LINE CORD
3S8 – TO YOKE HORIZONTAL
3T8 – TO DEGAUSSER
4A9 – I.F. LOOP THROUGH (JUMPER)
4P4 – TO SPKR
5L – SET-UP JUMPER
8B8 – IR AMP/DET.

HORIZONTAL-TILT WEDGE ADJUSTMENT

The vertical lines at 3 and 9 o'clock are converged by horizontally tilting the yoke and inserting a wedge, FIRST, at 4 or 8 o'clock, whichever has the larger space, until it is firmly seated between the CRT glass and yoke coils. Then insert the 3rd wedge in the remaining horizontal tilt position until is firmly seated between the CRT Glass and Yoke Coils. Convergence at 3 and 9 o'clock should be maintained during this operation.

When the 3 wedges are firmly installed for acceptable convergence, lock the wedges in place by applying a strip of tape (2.5 inches long PN. 140-389) across the TABS of each wedge, firmly against the CRT glass. The CRT Glass surface should be clean and free of dust and other foreign material.

UNUSUAL TILT CASE

There may be some cases of picture tube and yoke combination where the yoke will require vertical tilt in the opposite (or UP) direction to obtain convergence. In such cases, insert the vertical tilt wedge at the bottom (or "6" o'clock) position. Follow through the Horizontal-Tilt Adjustment by using the "2" and "10" o'clock position and secure each wedge with a piece of tape as described above.

IMPROVING CRT CORNER PURITY

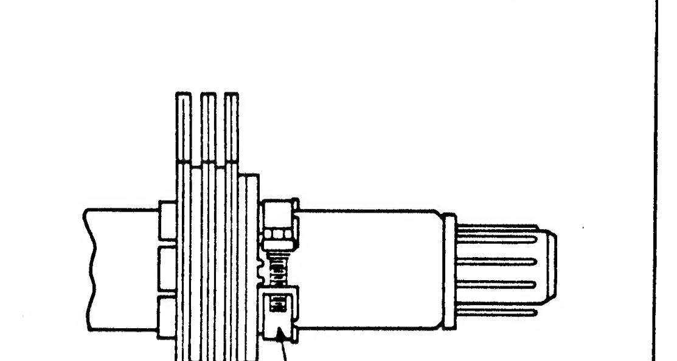
CRT's that display corner purity problems even after following servicing procedures can be modified with a picture correction kit (P/N 949-50). The purity can be improved by placing a picture correction magnet (included in the kit) on the CRT funnel. Refer to the following modification steps and illustration to place the magnet properly.

MODIFICATION

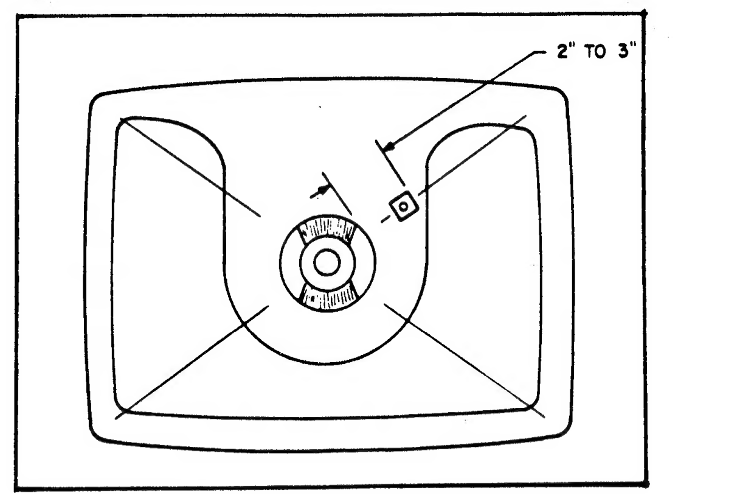
1. Place the magnet on the CRT funnel as shown, in the quadrant exhibiting impurity.
2. Rotate the magnet in place to the position shown for best purity.
3. Place a piece of ½" by 2" fiberglass tape (P/N 140-389-48) over the magnet to hold it in place.
4. Degauss the CRT once the magnet is in place to insure that the magnet is not over the internal magnetic shield.

NOTE: If the magnet is placed over the internal magnet shield any apparent purity correction will disappear after degaussing. Reposition the correction magnet off the internal shield and degauss again.

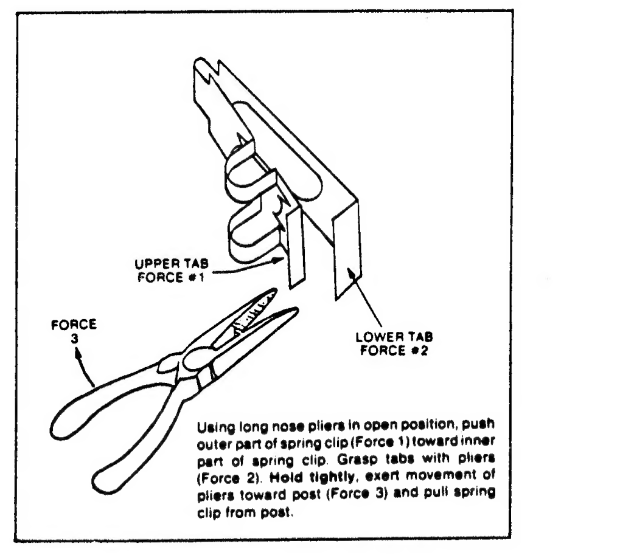
LOCATION OF MAGNET ASSEMBLY ON CRT



PART NO	CHASSIS TYPE	CRT TYPE	CRT SIZE
BEAM BENDER IS PART OF YOKE ASSEMBLY	C	90° COTY	13V & 19V



SPEAKER HOLDING CLIP REMOVAL



Using long nose pliers in open position, push outer part of spring clip (Force 1) toward inner part of spring clip. Grasp tabs with pliers (Force 2). Hold tightly, exert movement of pliers toward post (Force 3) and pull spring clip from post.